WHAT IS CLAIMED IS:

1. A valve assembly comprising:

a substrate including;

a first surface;

a first recess formed in the first surface;

a second recess formed in the first surface; and

a recessed channel that is recessed relative to the first surface of the substrate and extending from the first recess to the second recess, the recessed channel being at least partially defined by a first deformable material having a first modulus of elasticity;

an elastically deformable cover including;

a layer of an elastically deformable material having a modulus of elasticity that is greater than the modulus of elasticity of the first deformable material; and

an adhesive layer in contact with the first surface of the substrate;

wherein the elastically deformable cover covers the recessed channel and forms a fluid communication between the first and second recesses when the elastically deformable cover layer is in a non-deformed state.

2. The valve assembly of claim 1, wherein in a deformed state of the elastically deformable cover, the adhesive layer is capable of contacting the recessed channel.

3. The valve assembly of claim 1, wherein the substrate comprises a polycarbonate material.

4. The valve assembly of claim 1, wherein the substrate comprises a cyclic olefin copolymer material.

5. The valve assembly of claim 1, wherein the adhesive layer comprises a pressure sensitive adhesive.

6. The valve assembly of claim 1, wherein the adhesive layer comprises a hot melt adhesive.

7. A system comprising:

a valve assembly including;

a substrate including;

a first surface;

a first recess formed in the first surface;

a second recess formed in the first surface; and

a recessed channel that is recessed relative to the first surface of the substrate and extending from the first recess to the second recess, the recessed channel being at least partially defined by a first deformable material having a first modulus of elasticity;

an elastically deformable cover including;

a layer of an elastically deformable material having a modulus of elasticity that is greater than the modulus of elasticity of the first deformable material; and

an adhesive layer in contact with the first surface of the substrate;

wherein the elastically deformable cover covers the recessed channel and forms a fluid communication between the first and second recesses when the elastically deformable cover layer is in a non-deformed state;

a platform including at least one holder for supporting the valve assembly; and

a first deformer including a drive unit capable of driving the first deformer toward the valve assembly and applying a deforming force to at least one of the elastically deformable cover and the deformable material of the recessed channel.

8. The system of claim 7, wherein the first deformer is capable of forcing the adhesive layer against the recessed channel to prevent fluid communication between the first and second recesses.

9. The system of claim 8, wherein the first deformer includes a distal tip and an electrically resistive heater at or adjacent the distal tip.

10. The system of claim 7, wherein the first deformer includes a channel blade that is capable of being driven by the drive unit to deform the elastically deformable cover and the material defining the recessed channel.

11. The system of claim 10, wherein the drive unit is further capable of bringing the first deformer out of contact with the elastically deformable cover such that the cover elastically rebounds faster than the deformed material of the recessed channel and a fluid communication results between the first and second recesses by way of a fluid communication opening.

12. The system of claim 7, wherein the substrate comprises a polycarbonate material.

13. The system of claim 7, wherein the substrate comprises a cyclic olefin copolymer material.

14. The system of claim 7, wherein the adhesive layer comprises a pressure sensitive adhesive.

15. The system of claim 7, wherein the adhesive layer comprises a hot melt adhesive.

16. A valve assembly comprising:

a substrate including;

a first surface;

a first recess formed in the first surface;

a second recess formed in the first surface;

a recessed channel that is recessed relative to the first surface of the substrate and extends from the first recess to the second recess; and

a deformation channel that is recessed relative to the recessed channel and extends from the first recess to the second recess;

wherein the recessed channel and the deformation channel are at least partially defined by a first deformable material having a first modulus of elasticity;

an elastically deformable cover including;

a layer of an elastically deformable material having a modulus of elasticity that is greater than the modulus of elasticity of the first deformable material; and

an adhesive layer in contact with the first surface of the substrate;

wherein, in a deformed state of the elastically deformable cover, a portion of the elastically deformable cover is spaced from the deformation channel and forms a fluid communication opening between the first and second recesses.

17. The valve assembly of claim 16, wherein the substrate comprises a polycarbonate material.

18. The valve assembly of claim 16, wherein the substrate comprises a cyclic olefin copolymer material.

19. The valve assembly of claim 16, wherein the adhesive layer comprises a pressure sensitive adhesive.

20. The valve assembly of claim 16, wherein the adhesive layer comprises a hot melt adhesive.

21. A system comprising:

a valve assembly including;

a substrate including;

a first surface;

a first recess formed in the first surface;

a second recess formed in the first surface;

a recessed channel that is recessed relative to the first surface of the substrate and extends from the first recess to the second recess; and

a deformation channel that is recessed relative to the recessed channel and extends from the first recess to the second recess;

wherein the recessed channel and the deformation channel are at least partially defined by a first deformable material including a first modulus of elasticity;

an elastically deformable cover including;

a layer of an elastically deformable material having a modulus of elasticity that is greater than the modulus of elasticity of the first deformable material; and

an adhesive layer in contact with the first surface of the substrate;

wherein, in a deformed state of the elastically deformable cover, a portion of the elastically deformable cover is spaced from the deformation

channel and forms a fluid communication opening between the first and second recesses.

a platform including at least one holder for supporting the valve assembly; and

a first deformer including a drive unit capable of driving the first deformer toward the valve assembly and applying a deforming force to the elastically deformable cover.

22. The system of claim 21, wherein the first deformer includes a contact pad disposed at one end thereof, the first deformer being capable of being driven by the drive unit such that the pad can contact the elastically deformable cover layer and force adhesive of the adhesive layer into the deformation channel to close the fluid communication between the first and second recesses.

23. The system of claim 22, wherein the contact pad of the first deformer includes an electrically resistive heater disposed at or adjacent the one end of the first deformer.

24. The system of claim 22, wherein the drive unit is further capable of bringing the first deformer out of contact with the elastically deformable cover after closing the fluid communication opening between the first and second recesses.

25. The system of claim 21, wherein the substrate comprises a polycarbonate material.

26. The system of claim 21, wherein the substrate comprises a cyclic olefin copolymer material.

27. The system of claim 21, wherein the adhesive layer comprises a pressure sensitive adhesive.

28. The system of claim 21, wherein the adhesive layer comprises a hot melt adhesive.

29. A method comprising:

providing a valve assembly including:

a substrate including;

a first surface;

a first recess formed in the first surface;

a second recess formed in the first surface; and

a recessed channel that is recessed relative to the first surface of the substrate and extending from the first recess to the second recess, the recessed channel being at least partially defined by a first deformable material having a first modulus of elasticity;

an elastically deformable cover including;

a layer of an elastically deformable material having a modulus of elasticity that is greater than the modulus of elasticity of the first deformable material; and

an adhesive layer in contact with the first surface of the substrate;

wherein the elastically deformable cover covers the recessed channel and forms a fluid communication between the first and second recesses when the elastically deformable cover layer is in a non-deformed state;

driving a first deformer against the elastically deformable cover to deform the cover and force the adhesive layer against the recessed channel to prevent fluid communication between the first and the second recesses.

30. The method of claim 29, further comprising transferring heat energy from the first deformer to the adhesive layer when the first deformer is driven against the deformable cover.

31. The method of claim 29, further comprising bringing the first deformer out of contact with the elastically deformable cover, whereby the adhesive layer adheres the deformable material of the cover against the recessed channel to prevent fluid communication between the first and the second recesses.

32. The method of claim 29, further comprising driving the first deformer against the elastically deformable cover to deform the deformable material of the recessed channel.

33. The method of claim 32, further comprising bringing the first deformer out of contact with the elastically deformable cover such that the cover elastically

rebounds faster than the deformed material of the recessed channel and a fluid communication results between the first and second recesses.

34. A method of closing a fluid communication between a first recess and a second recess of a valve assembly, comprising:

providing a valve assembly including;

a substrate including;

a first surface;

a first recess formed in the first surface;

a second recess formed in the first surface;

a recessed channel that is recessed relative to the first surface of the substrate and extends from the first recess to the second recess; and

a deformation channel that is recessed relative to the recessed channel and extends from the first recess to the second recess;

an elastically deformable cover including;

a layer of an elastically deformable; and

an adhesive layer in contact with the first surface of the substrate;

driving a first deformer including a contact pad disposed at one end thereof against the elastically deformable cover such that the contact pad forces adhesive of the adhesive layer into the deformation channel to close the fluid communication opening between the first and second recesses.

35. The method of claim 34, further comprising transferring heat energy from the contact pad of the first deformer to the adhesive.

36. The method of claim 34, further comprising bringing the first deformer out of contact with the elastically deformable cover.

37. The method of claim 34, wherein the second recess retains a purification material.